

EFFECTS OF DUAL-TASK TRAINING ON BALANCE IN PATIENTS WITH ACQUIRED BRAIN INJURY



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OBJECTIVES

- 1) Detectar la existencia de dificultades with dual task performance en relación al static balance in patients with Acquired Brain Injury (ABI).
- 2) To determinar the effect of task-specific balance training under dual-task conditions in patients with Acquired Brain Injury (ABI)

METHODS

A double-blind, randomized controlled trial

Subjects	ABI patients in rehabilitation, with balance disorders, ages 16 to 50.
Inclusion Criteria	- Capacidad de caminar en exteriores sin ayuda (personal ni productos de apoyo). - No alteraciones neurológicas o musculoesqueléticas previas al daño cerebral adquirido. - Posturógrafo: En bipedestación estática toleren colchoneta y ojos abiertos.
Exclusion criteria	Neurological or musculoskeletal impairments previous

Cognitive Ability

Physical Condition

- 1.- Berg Balance Scale: valoración equilibrio. 14 tareas .Puntuación : 0 a 4
2. Activities –specific Balance Confidence (ABC)Scale: el paciente indica cómo de seguro se siente al realizar una serie de actividades

Comorbidity

Assessment Protocol

3. Postural measurement system (NedSVE/IBV, versión 5.0. beta) Desplazamiento total del cop y área de barrido.
 - Equilibrio simple :ROA :Firm -Romberg -Eyes Open
 - Equilibrio Simple : RGA :Foam-Romberg Eyes Open
 - Dual Task :RAV : Firm -Romberg -dual
 - Dual Task : RGV :Foam-Romberg - Dual

*DUAL TASK: Combination of cognitive(stroop test and balance tasks in force platform , firm and foam superficie

SS

Training groups: 30 minute group training session, 3 times a week , 4 weeks

- 1.- SIMPLE COGNITIVE TASKS : A ; Dual TASK : A + B

A : PROGRAMA DE EQUILIBRIO SIMPLE		B: PARTE COGNITIVA
Estabilidad corporal	- Bipedestación base estrecha, ojos abiertos - Tandem, ojos abiertos - Bipedestación base estrecha, ojos cerrados - Tandem, ojos cerrados	- Palabras encadenadas - Números de 2-2 - Palabras encadenadas - Números de 3-3
Estabilidad corporal + manipulación	- Bipedest. base estrecha + ABD-ADD hombros - Bipedestación base estrecha, coger objeto del suelo	- Sumas individuales por turno
Desplazamiento corporal	- Marcha con base estrecha - Marcha hacia atrás - Marcha ojos cerrados	- Palabras encadenadas - Números de 2-2 - Enumerar categorías
Desplazamiento corporal + manipulación (pronosupinación antebrazos)	- Marcha con base estrecha - Marcha hacia atrás - Marcha, ojos cerrados	- Contaje numérico hacia atrás - Enumerar categorías

Data Analysis (S)

- Participant characteristics analyses
- Comparison across patients and controls using Mann-Whitney U test
- Statistical significance level: p < 0.05

Demographics

	GROUP	
	PATIENTS n= 12	CONTROLS n= 14
AGE (mean ± sd)	34.8 ± 9.1	32.9 ± 8.3
SEX (n)		
male	6	5
female	8	7
ETIOLOGY (n)		
TBI Severe	6	
Hemorrhagic CVA	3	
Isquémic CVA	3	
Hipoxia	1	
Brain Tumor	1	

- 1.- SIMPLE COGNITIVE TASKS:

Patients vs. Controls

No differences were observed for any of the cognitive tasks

- 2.- SIMPLE FORCE PLATFORM:

Patients vs. Controls

Patients demonstrated higher sway velocity in all conditions (FEO U=38.00, p=0.015; FEC U=26.00, p=0.002; FoFO=29.5, p=0.04; FoFC U=31.5, p=0.01) when compared to controls.

- 3.- DUAL TASK:

Patients vs. Controls

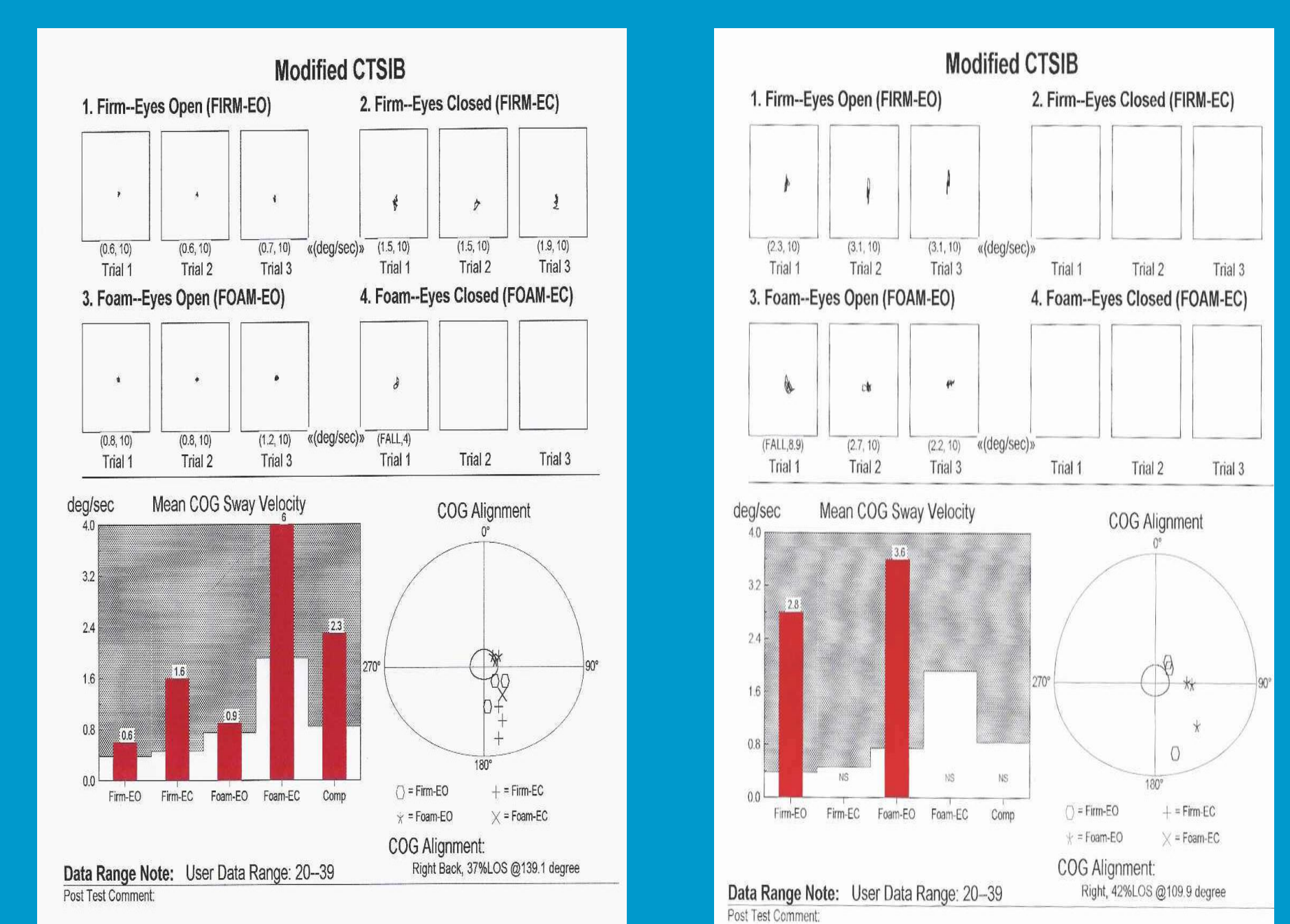
Patients demonstrated higher sway velocity when performing: Aud+FEO U=42.00, p=0.027; Aud+FEC U=38.00, p=0.016; Aud+FoFO=23.5, p=0.002; Color+FEO U=23.5, p=0.01; Number+FoFO U=29.5, p=0.008) when compared to controls.

Dual vs. Simple Tasks within groups

Both patients and controls slowed their mean sway velocity when performing the FoFO and FoFC task together with the auditory task (all p < 0.05)

Dual vs. Simple Tasks between groups

No differences were observed between both groups.



CONCLUSIONS

1. The results reported in this study do not indicate differences in sway velocity when performing a dual task (force platform + attention) vs.

LIMITATIONS

1. Small sample size
2. heterogeneity of etiology

References

1. Artículo Maria :
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3. Hyndman D, Pickering RM , Ashburn A , Condon JE. Reduced Sway During Dual Task Balance Performance Among People With Stroke at 6 and 12 Months After Discharge From Hospital Neurorehabil Neural Repair 2009; 23; 847- 854